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EXAMINER  
BROWN, HELENE C

ART UNIT	PAPER NUMBER
3768	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/30/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/500,800

Applicant(s)

SELA ET AL.

Examiner

Helene Brown

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

2. The listing of references in the Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the Search Report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining

compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

### ***Abstract***

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. **The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided.** The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4). A new abstract of the disclosure is required and must be presented on a separate sheet, **apart from any other text.**

***Specification***

5. The disclosure is objected to because of the following informalities: Page 1 Line 17 – equipment is misspelled, needs to be equipment; Page 3 Line 13 concerns and primareily are misspelled, needs to be concerns and primarily respectively; Page 3 Line 10 – analysis0 is a typo, needs to be analysis; Page 3 Line 28 – surfcae is misspelled, needs to be surface; Page 9 Line 17, Page 11 Line 2 – jount is misspelled, needs to be joint. Appropriate correction is required.

***Drawings***

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Element 93. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Figure 160 Element 76 and Figure 3 Element 98. Corrected drawing sheets

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in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

8. Claims are objected to because of the following informalities:

A.) Claims 11 – Duplicate wording of *transducer* (Part a, Section iv)

B.) Claims 19 & 29 – Duplicate wording of *at* (Part b)

C.) Claim 21 – Improper grammar *includes not include*

Appropriate correction is required.

### **Double Patenting**

#### ***Nonstatutory Rejection***

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory

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obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claim 1, 4-8, 10-12, 15 & 16 are rejected under the judicially created doctrine of obviousness-type double patenting as unpatentable over claim 1, 3-6, 8-11, 14 & 15 of U.S. Patent No. 6,964,639 B2. For double patenting to exist as between the rejected claims and patent claim 1, 3-6, 8-11, 14 & 15, it must be determined that the rejected claims are not patentably distinct from claim 1, 3-6, 8-11, 14 & 15. In order to make this determination, it first must be determined whether there are any differences between the rejected claims and claim 1, 3-6, 8-11, 14 & 15 and, if so, whether those differences render the claims patentably distinct.

Claim 1 of patent teaches all the elements of rejected claim 1 except for "receiving a significant portion of said energy as an echo-reflection at said defined location."

However, the patent further explains the claimed matter in claim 10 (i), "said at least one transducer positioned at a defined location" and in claim 10 (iii), "said at least one

transducer capable of receiving at least a portion of said energy as an echo-reflection from the surface of the hard tissue”.

Rejected claim 4 is merely broader than claim 6 of the patent. Therefore, it is “anticipated” since it would be obvious to make broader (*In re Goodman*).

Rejected claim 5 is merely broader than claim 3 of the patent. Therefore, it is “anticipated” since it would be obvious to make broader (*In re Goodman*).

Rejected claim 6 is merely broader than claim 4 of the patent. Therefore, it is “anticipated” since it would be obvious to make broader (*In re Goodman*).

Rejected claim 7 is merely broader than claim 5 of the patent. Therefore, it is “anticipated” since it would be obvious to make broader (*In re Goodman*).

Rejected claim 8 is merely broader than claim 8 of the patent. Therefore, it is “anticipated” since it would be obvious to make broader (*In re Goodman*).

Rejected claim 10 is merely broader than claim 9 of the patent. Therefore, it is “anticipated” since it would be obvious to make broader (*In re Goodman*).

Claim 10 of patent teaches all the elements of rejected claim 11 except for:

- a. “transmit commands to said position locator and adjustment mechanism to cause said transducer to move to said series of different defined locations.”

However, the patent further explains the claimed matter in claim 12, “transmitting a command to said position locator and adjustment mechanism to cause at least one transducer to move to said series of different defined locations.”

- b. “to generate a map of a t least a portion of said surface of the hard tissue by applying a predetermined rule.” However, the patent further explains the



claimed matter in claim 1, " a predetermined rule to generate a map of the irregularities in the surface of the tissue"

Rejected claim 12 is merely broader than claim 11 of the patent. Therefore, it is "anticipated" since it would be obvious to make broader (*In re Goodman*).

Rejected claim 15 claim is merely broader than 14 of patent. Therefore, it is "anticipated" since it would be obvious to make broader (*In re Goodman*).

Rejected claim 16 is merely broader than claim 15 of the patent. Therefore, it is "anticipated" since it would be obvious to make broader (*In re Goodman*).

11. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims read on each other. It is clear that all the elements of claim 1, 4-8, 10-12, 15 & 16 are to be found in claim 1, 3-6, 8-11, 14 & 15. The difference between claim 1, 4-8, 10-12, 15 & 16 of the application and claim 1, 3-6, 8-11, 14 & 15 of the patent lies in the fact that the patent claim includes many more elements and is thus much more specific. Thus, the invention of claim 1, 3-6, 8-11, 14 & 15 of the patent is in effect a "species" of the "generic" invention of claim 1, 4, 6, 8, 11 & 15. It has been held that the generic invention is "anticipated" by the "species". See *In re Goodman*, 29 USPQ2d 2010 (Fed. Cir. 1993). Since claim 1, 4-8, 10-12, 15 & 16 is anticipated by claim 1, 3-6, 8-11, 14 & 15 of the patent, it is not patentably distinct from claim 1, 3-6, 8-11, 14 & 15.

***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claim 1-2, 4-17, 19-25, & 27-28 rejected under 35 U.S.C. 102(b) as being obvious by Morimoto'521 et al. (US Patent No. 5,806,521).

***Claim 1:*** Morimoto'521 teaches a method of creating an ultrasonic image of a hard tissue within a target (Col. 1, Line 42-44). The method taught comprises of transmitting from at least one ultrasonic transducer at a defined location a focused beam of ultrasonic energy towards the target; (Col. 3, Line 22-30); adjusting an angle of incidence between the focused beam and a surface of the hard tissue to a normal angle (Col. 8, Line 51-54); receiving an echo-reflection at a defined location (Col. 19, Line 30-31); defining the transducer in six degrees of freedom (Col. 16, Line 58-61); calculating the position of a surface causing the echo-reflection (Col. 4, Line 49-52); moving the transducer to a different defined location (Col. 4, Line 16-21); compiling to generate a map of the surface (Col. 4, Line 53-55); determining a map which represents a surface of the hard tissue within the target according to a predetermined rule (Col. 19, Line 63 - Col. 21, Line 30).

***Claim 2:*** Morimoto'521 teaches a method where a predetermined rule is a geometric rule and a physical rule (Col. 4, Line 40-45, Col. 14, Line 33-58, & Col. 19, Line 63 - Col. 21, Line 30).

**Claim 4:** Morimoto'521 teaches a method with a device capable of displaying various aspects of the ultrasound data and the user utilizing various software, processes, and techniques to analyze the images (Col. 7, Line 26-27, Col. 12, Line 51-52 and Col. 13, Line 23-25).

**Claim 5:** Morimoto'521 teaches a method to control by means of a central processing (Col. 8, Line 25-31).

**Claim 6:** Morimoto'521 teaches a method where controlling includes at least one item selected from the group consisting of said adjusting and said moving (Col. 7, Line 2-4).

**Claim 7:** Morimoto'521 teaches a method where controlling consists of either mechanical control, selection from an array and electronic control (Col. 7, Line 2-15).

**Claim 8:** Morimoto'521 teaches a method where at least one item of said adjusting and said moving is performed manually by a practitioner of the method (Col. 7, Line 2-15).

**Claim 9:** Morimoto'521 teaches a method where said performed manually indicates at least one manual input selected from the group consisting of a manual position adjustment by said practitioner of the method and at least one instruction transmitted to said central processing unit by said practitioner of the method (Col. 8, Line 32-47).

**Claim 10:** Morimoto'521 teaches a method of selecting from the group consisting of a two dimensional map and a three dimensional map (Col. 3, Line 9-11).

**Claim 11:** Morimoto'521 teaches a system for creating an ultrasonic image of a hard tissue within a target (Col. 1, Line 42-44). The system taught comprises of transmitting from at least one ultrasonic transducer at a defined location a focused beam of ultrasonic energy towards the target (Col. 3, Line 22-30); receiving an echo-reflection at a defined location (Col. 19, Line 30-31); and at least one transducer capable of communication with a central processing unit (Col. 8, Line 25-30). Morimoto'521 teaches a position locator and adjustment mechanism coupled to at least one transducer (Col. 7, Line 28-31). Morimoto'521 teaches a position locator and adjustment mechanism designed and constructed to be capable of adjusting an angle of incidence between said focused beam and said surface of the hard tissue in response to a command from said central processing unit (Col. 3, Line 25-30). Morimoto'521 teaches that image quality is best when the incident angle is between +/- 10 degrees (Col. 8, Line 61-63). However, Morimoto'521 teaches later on a mechanical arm with six degrees of freedom to be utilized for positioning and orientation (Col. 16, Line 58-61). Morimoto'521 teaches a position locator and adjustment mechanism further designed and constructed to be capable of moving said ultrasonic transducer to a series of different defined location (Col. 4, Line 49-52). Morimoto'521 teaches a system to transmit commands to a position locator and adjustment mechanism for movement to defined locations (Col. 7, Line 7-10). Morimoto'521 teaches a system to calculate a set of position co-ordinates for at least portion of said surface of the hard tissue causing said echo-reflection (Col. 4, Line 49-52). Morimoto'521 teaches a system to compile a

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plurality of said sets of position co-ordinates to generate a map of at least a portion of said surface of the hard tissue by applying a predetermined rule (Col. 4, Line 40-45).

**Claim 12:** Morimoto'521 teaches a system capable of displaying various aspects of the ultrasound data and the user utilizing various software, processes, and techniques to analyze the images (Col. 7, Line 26-27, Col. 12, Line 51-52 and Col. 13, Line 23-25).

**Claim 13:** Morimoto'521 teaches a system where the angle of incidence is a normal angle determined by moving said at least one ultrasonic transducer (Col. 3, Line 51-54).

**Claim 14:** Morimoto'521 teaches a system where controlling consists of either mechanical control, selection from an array and electronic control (Col. 7, Line 2-15).

**Claim 15:** Morimoto'521 teaches a system where the position locator and adjustment mechanism is further designed and configured to receive input from an operator of the system, said input being selected from the group consisting of a manual position adjustment by an operator of the system and at least one instruction transmitted to said central processing unit (Col. 8, Line 32-47).

**Claim 16:** Morimoto'521 teaches a system of selecting from the group consisting of a two dimensional map and a three dimensional map (Col. 3, Line 9-11).

**Claim 17:** Morimoto'521 teaches a system where a predetermined rule is selected from a group consisting of a geometric rule and a physical rule (Col. 4, Line 40-45, Col. 14, Line 33-58, & Col. 19, Line 63 - Col. 21, Line 30).

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Claim 3 and 18-33 rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto'521 et al. (US Patent No. 5,806,521) and in further view of Ishii'363 et al. (US Patent No. 5,749,363).

**Claim 3 & 18:** Morimoto'521 does not specifically teach the maximization function as present by the applicant. Morimoto '521, however, does teach the functional equivalent of the maximization function (Col. 19, Line 63 - Col. 21, Line 30). The maximization function is based on reflections, angles and position. The result is to determine the hard tissue within a target area. Morimoto teaches a function also based on reflections, angles and position. The Morimoto equation result is also to determine the hard tissue with a target area. Thus, Morimoto teaches the functional equivalent of the maximization function (Col. 19, Line 63 - Col. 21, Line 30).

**Claim 19:** Morimoto'521 teaches a method of creating an ultrasonic image of a hard tissue including irregularities (Col. 1, Line 42-44). Morimoto'521 teaches transmitting a focused beam of ultrasonic energy from at least one ultrasonic transducer at a first defined location towards a surface of the hard tissue (Col. 3, Line 22-30). Morimoto'521 teaches receiving the echo-reflection at a second define location (Col. 4, Line 5-10). Morimoto'521 teaches a method to decide if a reflector is hard tissue, according to a first predetermined criterion such as predetermined anatomical features (Col. 4, Line 33-58). Morimoto'521 teaches evaluation of the hard tissue according to a second predetermined criterion (Col. 4, Line 43-45). However, Morimoto'521 does not teach a second predetermined criterion for the specific purpose of determining bone irregularities but for motion compensation. Ishii'363 does teach a method of identifying bone irregularities (Col. 1, Line 66 – Col. 2, Line 5). Ishii'363 disclosed method is beneficial. It is a popular simple apparatus and does not cause the same problems as x-rays (Col. 1, Line 24-26). It can also be used to diagnose bone irregularities (Col. 5,

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Line 26-28), which is a functional equivalent to the second predetermined criterion.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Ishii'363 and Morimoto'521. Morimoto'521 teaches a method to compile sets of position co-ordinates to generate a map of the surface of the hard tissue (Col. 4, Line 49-52).

**Claim 20:** Morimoto'521 teaches a method where each of said defined locations is defined as a set of position co-ordinates (Col. 4, Line 49-52).

**Claim 21:** Morimoto'521 teaches a method where the first defined location includes angles of transmission (Col. 3, Line 22-25).

**Claim 22 – 23:** Morimoto'521 teaches a method including employing additional first defined locations for said transmitting and additional second defined locations for said receiving. The user can move the device, either manually or automatically, to transmit and receive from any desired position (Col. 7, Line 2-7 & Col. 8, Line 32-37).

**Claim 24:** Morimoto'521 teaches a method with a device capable of displaying various aspects of the ultrasound data and the user utilizing various software, processes, and techniques to analyze the images (Col. 7, Line 26-27, Col. 12, Line 51-52 and Col. 13, Line 23-25).

**Claim 25:** Morimoto'521 teaches a method to control by means of a central processing (Col. 8, Line 25-31).

**Claim 27:** Morimoto'521 teaches a method where controlling consists of either mechanical control, selection from an array and electronic control (Col. 7, Line 2-15).



**Claim 28:** Morimoto'521 teaches a method of selecting from the group consisting of a two dimensional map and a three dimensional map (Col. 3, Line 9-11).

**Claim 29:** Morimoto'521 teaches a system for creating an ultrasonic image of a hard tissue and any irregularities thereupon within a target (Col. 4, Line 56-62). Morimoto'521 teaches a system of transmitting a focused beam of ultrasonic energy from at least one ultrasonic transducer at a first defined location towards a surface of the hard tissue (Col. 3, Line 22-30) and communicating with a central processing unit (Col. 8, Line 25-30). Morimoto'521 teaches receiving the echo-reflection at a second defined location (Col. 4, Line 5-10) and communicating with a central processing unit (Col. 8, Line 25-30). Morimoto'521 teaches a position locator and adjustment mechanism operably connectable to transmitter and receiver and capable of communication with central processing unit and designed and constructed to be capable of moving said transmitter and said receiver to a series of different defined locations (Col. 7, Line 2-15). Morimoto'521 teaches a central processing unit designed and configured to calculate a set of position co-ordinates (Col. 4, Line 49-52) corresponding to an ultrasonic reflector for each of said at least one second defined location (Col. 4, Line 5-10). Morimoto'521 teaches a central processing unit designed and configured to decide if the reflector is a hard tissue according to a first predetermined criterion such as predetermined anatomical features (Col. 4, Line 33-58 & Col. 8, Line 25-30). Morimoto'521 teaches a central processing unit designed and configured to decide if the reflector constitutes an irregularity on the surface of the hard tissue according to a second predetermined criterion (Col. 4, Line 43-45 & Col. 8, Line

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25-30). Morimoto'521 teaches a central processing unit designed and configured to compile at least a portion of said sets of position co-ordinates to generate a map of at least a portion of said surface of the hard tissue (Col. 4, Line 40-45 & Col. 8, Line 25-30). Morimoto'521 teaches a central processing unit designed and configured to transmit commands to the position locator and adjustment mechanism to cause said transducer to move to a series of different defined locations (Col. 7, Line 2-15).

**Claim 30:** Morimoto'521 teaches a system capable of displaying various aspects of the ultrasound data and the user utilizing various software, processes, and techniques to analyze the images (Col. 7, Line 26-27, Col. 12, Line 51-52 and Col. 13, Line 23-25).

**Claim 31:** Morimoto'521 teaches a system where position locator and adjustment mechanism employs either mechanical control, selection from an array and electronic control (Col. 7, Line 2-15).

**Claim 32:** Morimoto'521 teaches a system where said performed manually indicates at least one manual input selected from the group consisting of a manual position adjustment by said practitioner of the method and at least one instruction transmitted to said central processing unit by said practitioner of the method (Col. 8, Line 32-47).

**Claim 33:** Morimoto'521 teaches a system of selecting from the group consisting of a two dimensional map and a three dimensional map (Col. 3, Line 9-11).

**Conclusion**

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Sharp, William A., US Patent No. 6,120,453 A, teaches a three-dimensional ultrasound system based on the coordination of multiple ultrasonic transducers; Ishii, Tetsuya et al., US Patent No. 5,749,363 A, teaches a osteoporosis diagnosing apparatus and method; Buhler, Joe P. et al., US Patent No. 6,015,383 A, teaches an apparatus and method for acoustic analysis of bone; Mele, Ruggero et al., US Patent No. 5,564,423, teaches an ultrasonic measurement system for the determination of bone density and structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene Brown whose telephone number is 571-272-2947. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on 571-272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

  
ELENI MANTIS MERCADER  
SUPERVISORY PATENT EXAMINER

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